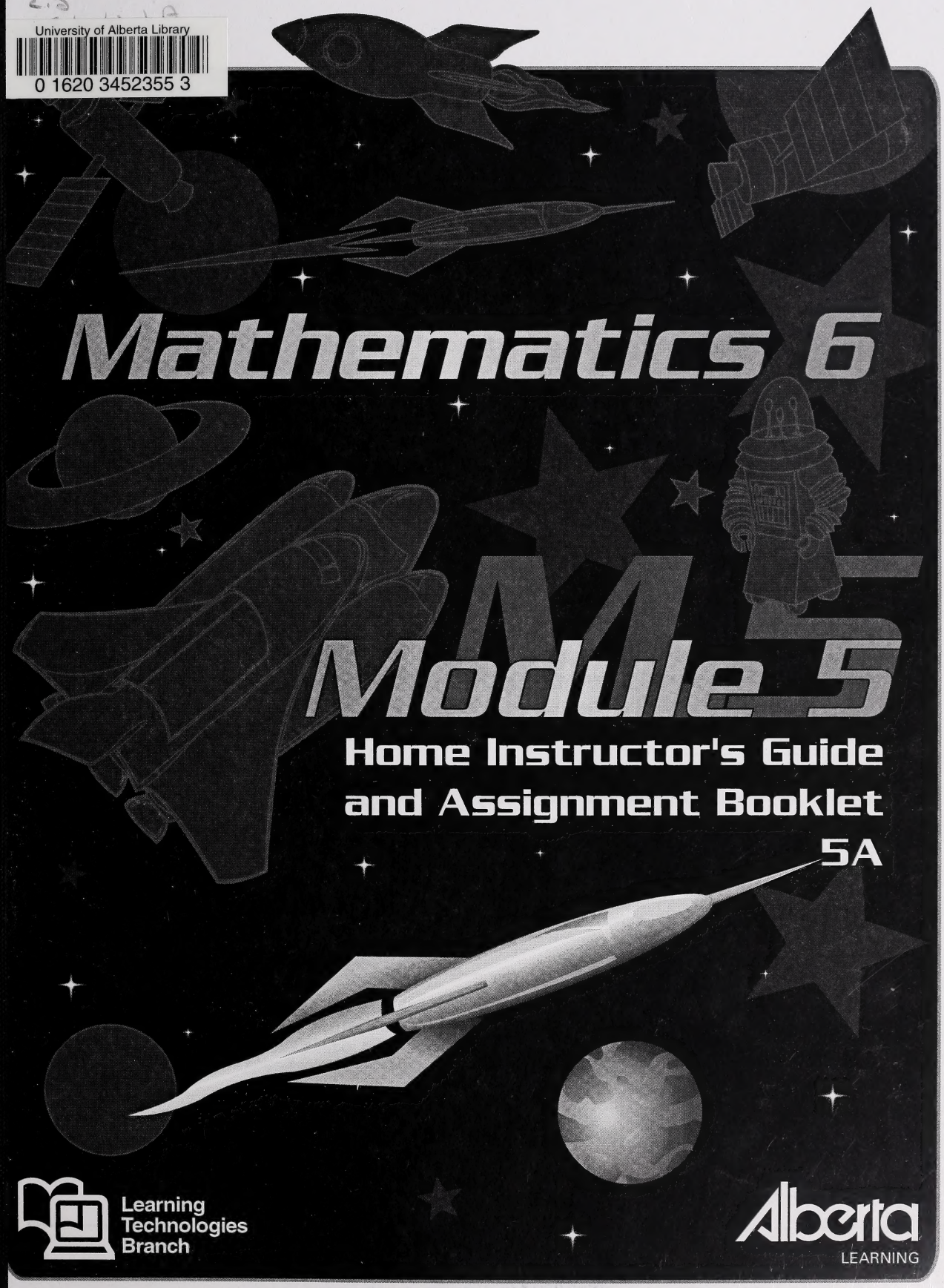
University of Alberta Library
0 1620 3452355 3



Mathematics 6

Module 5

Home Instructor's Guide and Assignment Booklet

5A

Learning Technologies Branch

Alberta LEARNING

Mathematics 6
Module 5: Measurement
Home Instructor's Guide and Assignment Booklet 5A
Learning Technologies Branch
ISBN 0-7741-2385-0

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

You may find the following Internet sites useful:

- Alberta Learning, **http://www.learning.gov.ab.ca**
- Learning Technologies Branch, **http://www.learning.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.learning.gov.ab.ca**

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

Copyright © 2002, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, 10155 – 102 Street, Edmonton, Alberta T5J 4L5. All rights reserved. Additional copies may be obtained from the Learning Resources Centre.

No part of this courseware may be reproduced in any form, including photocopying (unless otherwise indicated), without the written permission of Alberta Learning.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Learning so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

UNIVERSITY LIBRARY
UNIVERSITY OF ALBERTA

Module 5: Measurement

Overview

Module 5 extends the student's understanding of the metric system. The student investigates the most commonly used prefixes and symbols for multiples and fractions of metric units. The student reviews and extends previous understanding of perimeter and area and their relationship by developing rules for perimeters of polygons and areas of rectangles. The student reviews and extends previous understanding of rectangular prisms, their area, and volume. Also, indirect methods for determining the volume of irregular shapes are explored.

Assessment

At the end of each of the lessons in Module 5, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

The student is also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that the student can work at his or her own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review of basic facts and project work, Module 5 will take 4 to 5 weeks to complete.

Lesson 1: Metric Measures

Overview

The activities in Lesson 1 extend the student's understanding of the International System of Metric Measures (SI). The student will examine the most commonly used prefixes and symbols for multiples and fractions of all metric units. The student will discover how the metric system makes it easy to express any measure using smaller or larger units by multiplying or dividing the measure by powers of 10, such as 10, 100, and 1000.

Special Requirements

The following materials are required for Lesson 1:

- metre-stick
- ruler

Sharing Time

There is one Sharing Time exercise in this lesson—at the end of Activity 1.

Activity 1 Sharing Time

Practice and Homework Book, page 21, questions 1 to 5

	Millimetres	Centimetres	Metres
1.	50	5	0.05
2.	73	7.3	0.073
3.	950	95	0.95
4.	100	10	0.1
5.	180	18	0.18

Lesson 2: Perimeter and Area

Overview

In Lesson 2 the student reviews and extends his or her previous understanding of perimeter and area by developing rules for finding the perimeters of polygons and the areas of rectangles. The student will use the relationship between perimeter and area to solve problems.

Special Requirements

The following materials are required for Lesson 2:

- square tiles or pattern blocks
- ruler

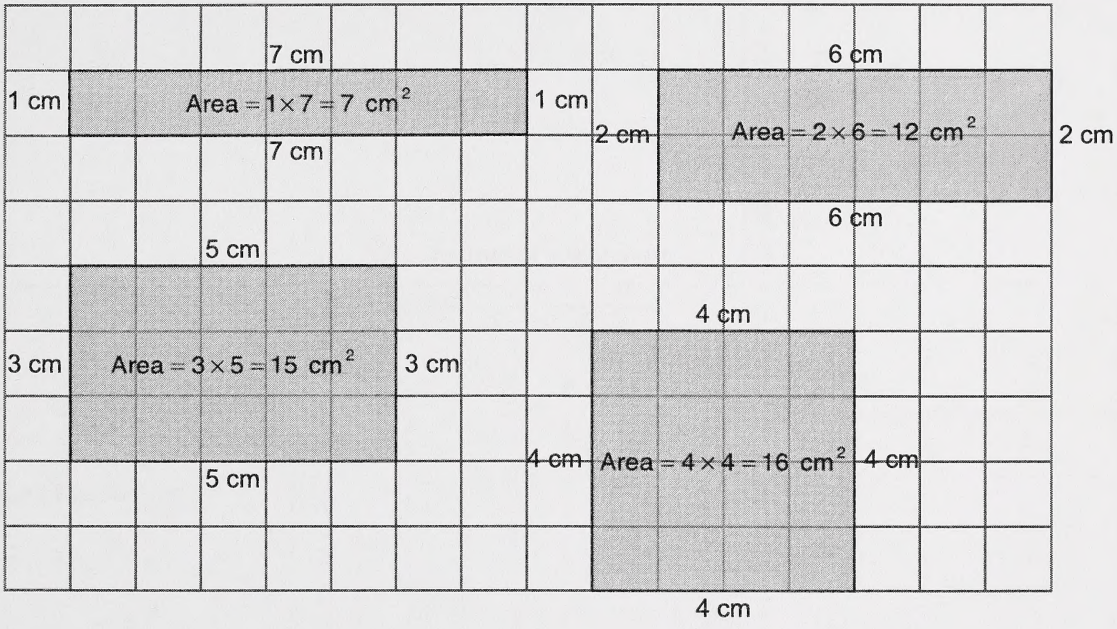
Sharing Time

There is one Sharing Time exercise in this lesson—at the end of Activity 3.

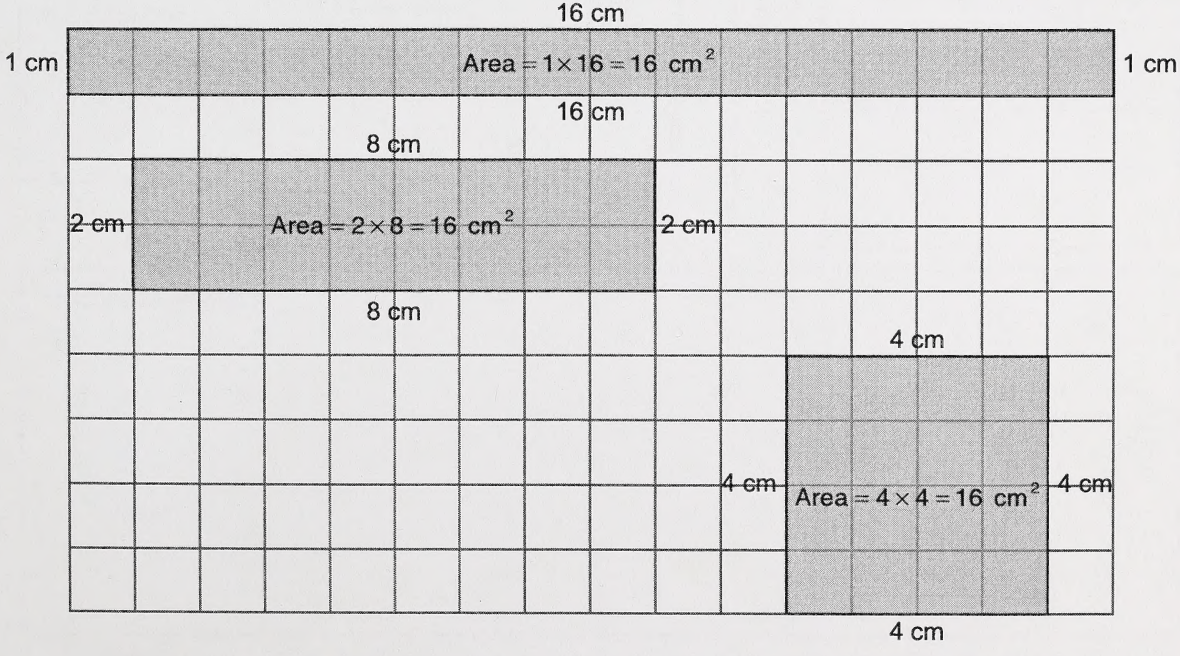
Activity 3 Sharing Time

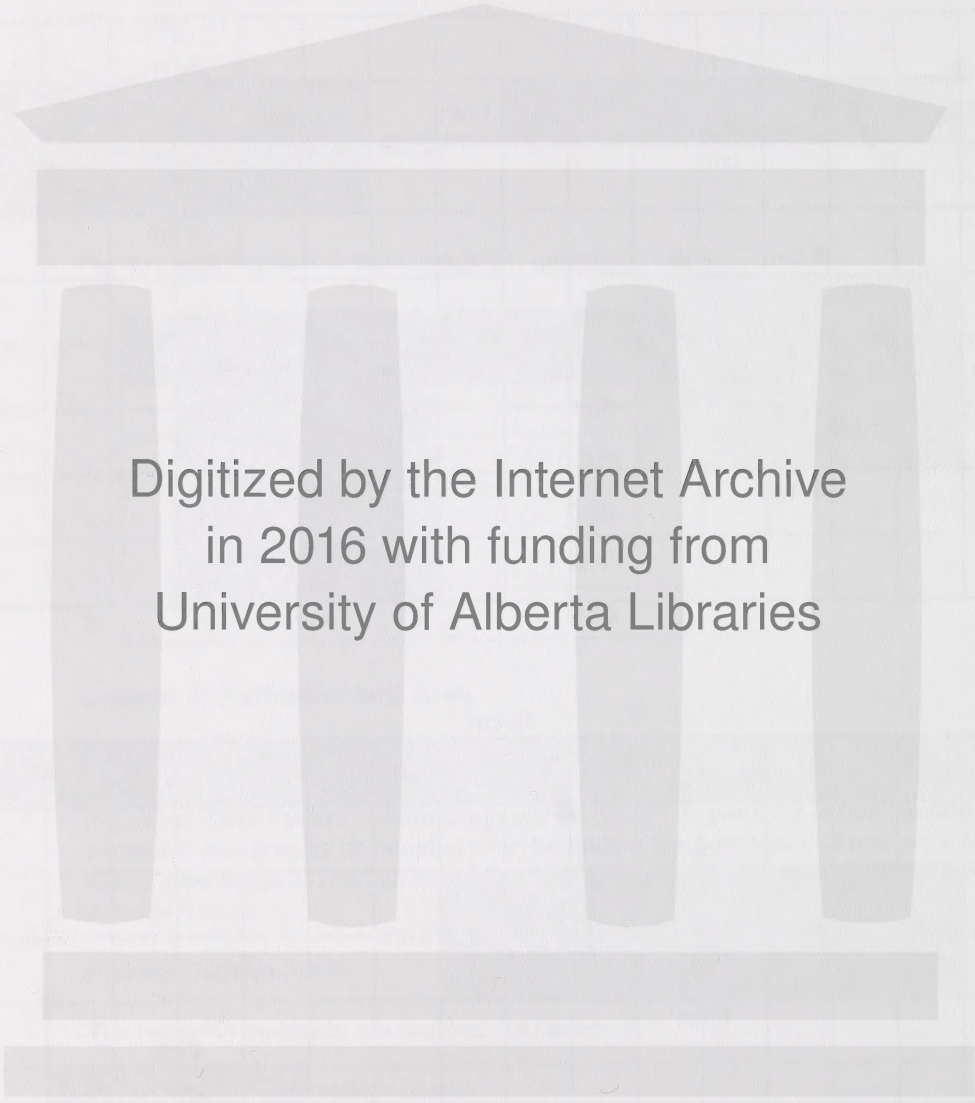
Practice and Homework Book, page 116, questions 1 and 2

1.



2.





Digitized by the Internet Archive
in 2016 with funding from
University of Alberta Libraries

https://archive.org/details/mathematics605albe_0

ASSIGNMENT BOOKLET 5A

PAT0610 Mathematics 6
Module 5: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's Comments and Questions

_____
Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Additional Information:

_____

_____

_____

_____

_____

_____

_____

_____

_____

FOR HOME INSTRUCTOR USE
(if label is missing or incorrect)

Student File Number:

_____

Date Submitted:

_____

Apply Module Label Here

Name

Address

Postal Code

Please verify that preprinted label is for correct course and module.

Teacher's Comments

_____
Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

INSTRUCTIONS FOR SENDING IN THIS DISTANCE LEARNING ASSIGNMENT BOOKLET

When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.

2. All faxing costs are the responsibility of the sender.

E-MAILING

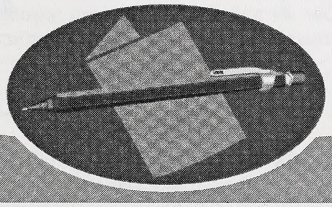
Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Mathematics 6

Module 5

Measurement

Assignment Booklet 5A



Learning Technologies Branch

Alberta LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 6
Module 5: Measurement
Assignment Booklet 5A
Learning Technologies Branch

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

You may find the following Internet sites useful:

- Alberta Learning, **http://www.learning.gov.ab.ca**
- Learning Technologies Branch, **http://www.learning.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.learning.gov.ab.ca**

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

Copyright © 2002, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, 10155 – 102 Street, Edmonton, Alberta T5J 4L5. All rights reserved. Additional copies may be obtained from the Learning Resources Centre.

No part of this courseware may be reproduced in any form, including photocopying (unless otherwise indicated), without the written permission of Alberta Learning.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Learning so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

ASSIGNMENT BOOKLET 5A
MATHEMATICS 6—MODULE 5: MEASUREMENT

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

30

Lesson 1 Assignment: Metric Measures

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

6

1. Use a ruler to measure very accurately each of the following types of Canadian currency. Measure the diameters of the coins and the width of the bill. Use your measurements to match the Canadian coin or bill with the number that is closest to its correct width or diameter.

a. penny _____	i. 2.3 cm
b. five-dollar bill _____	ii. 17 mm
c. nickel _____	iii. 0.07 m
d. dollar coin (loonie) _____	iv. 2.1 cm
e. quarter _____	v. 0.019 m
f. dime _____	vi. 26 mm

In 2001, the Royal Canadian Mint issued an 18-K gold hologram coin to commemorate the Chinese Year of the Snake. The coin's face value is $150 and its production is limited to 6888 coins worldwide. It has a mass of 13.61 g, a diameter of 28 mm, and it is 1.81 mm thick. Use this information and a calculator to answer questions 2 to 7. **Suggestion:** Think of estimates before calculating.

(3) **2.** Find the total mass (in gram, kilograms, and tonnes) of all of the coins that were minted. Round to hundredths when possible.

(3) **3.** Suppose all of the coins that were minted were stacked in a single pile. Find the height of the pile (in millimetres, centimetres, and metres). Round to hundredths when possible.

4. Suppose you had a 181-cm-high stack of these coins.

(2) **a.** Find the total face value of the stack.

(2) **b.** Find the total mass of the stack (in grams and kilograms).

(4) **5.** Suppose all of the coins that were minted were placed (touching each other) in a single straight line. Find the length of the line (in millimetres, centimetres, metres, and kilometres). Round to hundredths when possible.

6. Suppose you placed $750 000 worth of these coins in a line like in question 5.

(4) **a.** Find the length of the line (in millimetres, centimetres, and metres).

(2) **b.** Find the total mass of the coins in the line (in grams and kilograms).

7. Each of these commemorative coins has a volume of about 1.1 cm^3.

(2) **a.** Find the total capacity (in millilitres and litres) of all of the coins that were minted. Round to hundredths when possible.

(2) **b.** Find the total face value of 110 cm^3 of these coins.

(30)

Lesson 2 Assignment: Perimeter and Area

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

Turn to page 276 of your textbook to Finding Perimeter.

(3) **1.** Do the question about Karen and Alberto at the top of the page. Show your work.

(5) **2.** For each of the five figures shown at the bottom of page 276, find the perimeter without adding all the side lengths. Explain your strategies.

Figure A: _____

_____

_____

Figure B: _____

_____

_____

Figure C: _____

_____

_____

Figure D: _____

_____

_____

Figure E: _____

_____

_____

(2) **3.** Turn to page 277 of your textbook to On Your Own.

a. Do question 1.

(2) **b.** Do question 2.

(2) **c.** Do question 3.

(2) **4.** A triangular garden is a different length on each side. Side 2 is 3 m shorter than Side 1, and Side 3 is 8 m longer than Side 1. If the perimeter of the garden is 65 m, what is the length of each side? Show your work.

(2) **5.** A Canadian football field is rectangular in shape and measures about 137 m long (including end zones) and about 59 m wide. Find its area in hectares.

6. You have 24 m of fence wire to build a rectangular run for your dog in the backyard.

(6) **a.** Draw pictures of all possible rectangles whose sides are whole metres in length. Explain.

(3) **b.** If a fence that was built along the entire length of the property could be used as one side of the dog run, draw a picture to show how you would use the 24 m of fencing. Draw a picture and explain your thinking.

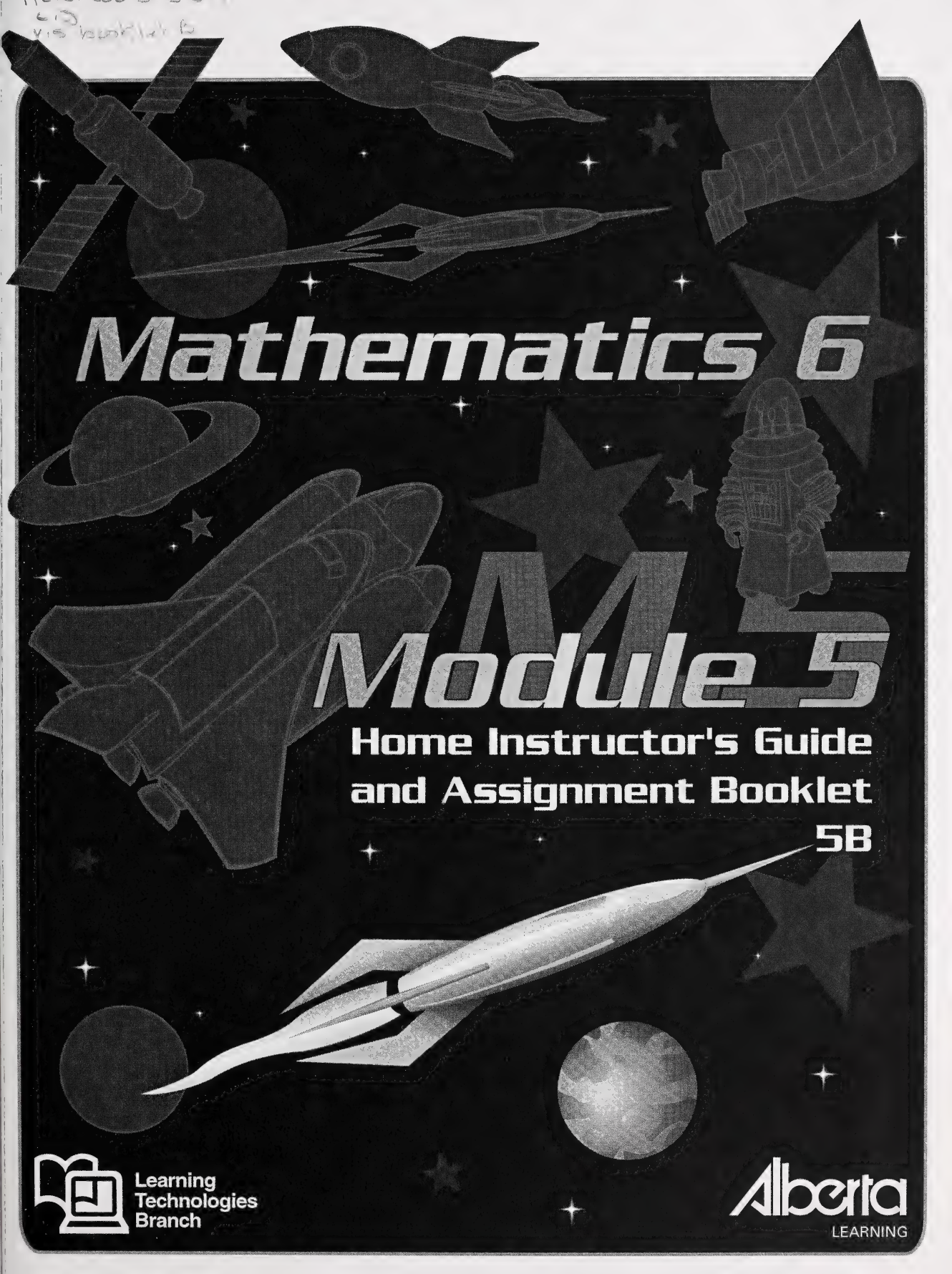
(3) **c.** Which of your models from question 6.a. would you build if you wanted to give your dog the largest area to play in? Explain why you made your choice.

_____

_____

_____

© 2002


Mathematics 6
M6
Module 5
Home Instructor's Guide
and Assignment Booklet
5B
Learning
Technologies
Branch
Alberta
LEARNING

Mathematics 6
Module 5: Measurement
Home Instructor's Guide and Assignment Booklet 5B
Learning Technologies Branch
ISBN 0-7741-2386-9

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

You may find the following Internet sites useful:

- Alberta Learning, **http://www.learning.gov.ab.ca**
- Learning Technologies Branch, **http://www.learning.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.learning.gov.ab.ca**

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

Copyright © 2002, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, 10155 – 102 Street, Edmonton, Alberta T5J 4L5. All rights reserved. Additional copies may be obtained from the Learning Resources Centre.

No part of this courseware may be reproduced in any form, including photocopying (unless otherwise indicated), without the written permission of Alberta Learning.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Learning so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

Lesson 3: Surface Area and Volume

Overview

In this lesson the student reviews and extends his or her previous understanding of rectangular prisms. The student learns how to find the surface area and develops a rule for finding the volume of a right rectangular prism. The students uses these procedures to solve a variety of problems.

Special Requirements

The following materials are required for Lesson 3:

- base ten blocks
- ruler
- several sheets of paper
- juice box
- centicubes
- centimetre grid paper
- scissors

Sharing Time

There is one Sharing Time exercise in this lesson—at the end of Activity 2.

Activity 2 Sharing Time

Practice and Homework Book, page 101, questions 1 to 5

1. Dimensions: $1\text{ cm} \times 1\text{ cm} \times 16\text{ cm}$

   Surface area: $\left(2 \times 1\text{ cm}^2\right) + \left(4 \times 16\text{ cm}^2\right)$

   $= 2\text{ cm}^2 + 64\text{ cm}^2$

   $= 66\text{ cm}^2$

2. Dimensions: $1\text{ cm} \times 2\text{ cm} \times 8\text{ cm}$

   Surface area: $\left(2 \times 2\text{ cm}^2\right) + \left(2 \times 8\text{ cm}^2\right) + \left(2 \times 16\text{ cm}^2\right)$

   $= 4\text{ cm}^2 + 16\text{ cm}^2 + 32\text{ cm}^2$

   $= 52\text{ cm}^2$

5. The volume of the prism in question 1 is 16 cm^3.

   The volume of the prism in question 2 is 16 cm^3.

ASSIGNMENT BOOKLET 5B

PAT0610 Mathematics 6
Module 5: Lesson 3 Assignment and Numbers in the News Project

Home Instructor's Comments and Questions

_____
Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Additional Information:

_____

_____

_____

_____

_____

_____

_____

_____

FOR HOME INSTRUCTOR USE
(if label is missing or incorrect)

Student File Number:

_____

Date Submitted:

_____

Apply Module Label Here

Name

Address

Postal Code

Please verify that preprinted label is for correct course and module.

Teacher's Comments

_____
Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

INSTRUCTIONS FOR SENDING IN THIS DISTANCE LEARNING ASSIGNMENT BOOKLET

When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.

2. All faxing costs are the responsibility of the sender.

E-MAILING

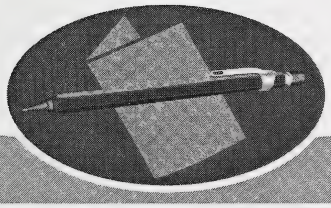
Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Mathematics 6

Module 5

Measurement

Assignment Booklet 5B



Learning
Technologies
Branch

Alberta
LEARNING

FOR TEACHER'S USE ONLY

Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	30	
Numbers in the News Project	10	
	40	

Teacher's Comments

Mathematics 6
Module 5: Measurement
Assignment Booklet 5B
Learning Technologies Branch

The Learning Technologies Branch acknowledges with appreciation the Alberta Distance Learning Centre and Pembina Hills Regional Division No. 7 for their review of this Home Instructor's Guide and Assignment Booklet.

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

You may find the following Internet sites useful:

- Alberta Learning, **http://www.learning.gov.ab.ca**
- Learning Technologies Branch, **http://www.learning.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.learning.gov.ab.ca**

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

Copyright © 2002, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, 10155 – 102 Street, Edmonton, Alberta T5J 4L5. All rights reserved. Additional copies may be obtained from the Learning Resources Centre.

No part of this courseware may be reproduced in any form, including photocopying (unless otherwise indicated), without the written permission of Alberta Learning.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Learning so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

ASSIGNMENT BOOKLET 5B
MATHEMATICS 6—MODULE 5: MEASUREMENT

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

There is one lesson assignment and a Numbers in the News project in this Assignment Booklet. The total value of the lesson assignment is 30 marks. The Numbers in the News project is worth 10 marks. The value of each question is stated in the left margin.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

Be sure to proofread each assignment carefully.

Lesson 3 Assignment: Surface Area and Volume

30

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. A juice drink box is 5 cm long, 4 cm wide, and 10 cm high.

(5) **a.** Explain how you can use centicubes to find the volume of the drink box without filling the whole box with centicubes. If you wish, you can draw a picture of the box and the centicubes as part of your explanation. There is room for your drawing on the next page.

_____

_____

_____

_____

_____

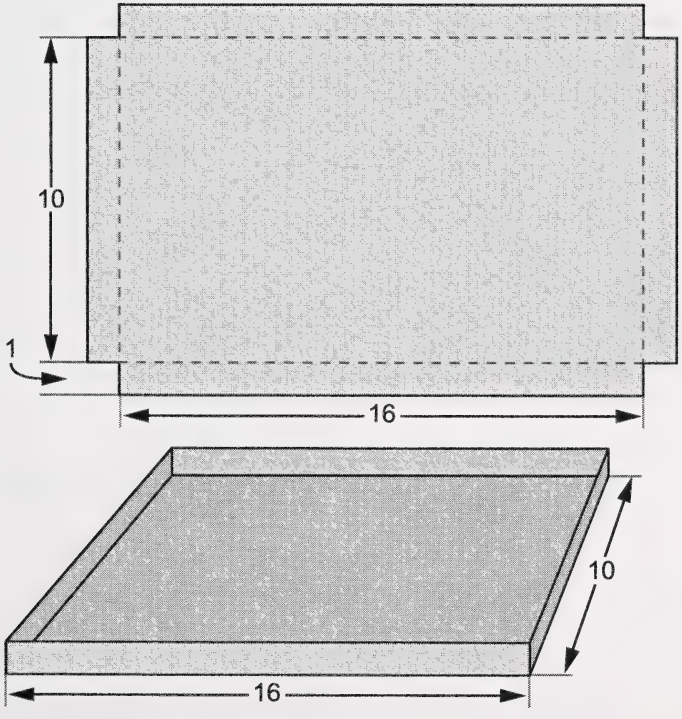
(2) **b.** Use your method from question 1.a. to write a rule you can use to find the volume of any rectangular prism.

(5) **c.** Use a single sheet of centimetre grid paper (See the back of this Assignment Booklet.) to design a net for the drink box. Glue it to a sheet of paper and label the dimensions of your net. Submit this page with this Assignment Booklet.

(5) **d.** Use the net to find the surface area of the drink box. Show your work.

(4) **e.** Describe how you can find the surface area of any rectangular prism.

2. A manufacturer of open boxes has a large supply of cardboard sheets, 12 units by 18 units in length. The box-making machine can be set to cut square corners from each sheet before folding it to make an open box (with no lid). The net and box made by cutting out a square with sides of 1 unit are shown in the following picture.



(4) **a.** The squares cut from the corners all have sides that are whole units. Use centimetre grid paper to cut out a net for the tallest possible open boxes that can be made by changing the size of the square cutouts. (Use a sheet of grid paper from the back of this Assignment Booklet.) Draw and label your net. Attach your net to this Assignment Booklet.

(2) **b.** Complete the following table for this box.

Size of Square Cutouts	Length of Box	Height of Box	Width of Box	Volume of Box

3. Taheera wants to know the volume of a stone she found. She puts some water in a 1-L beaker with capacity markings. The water level is 0.65 L. She drops the stone in the beaker and the water level is then 0.79 L.

(2) **a.** Find the volume of the stone in litres and millilitres. Show your work.

(1) **b.** Write the volume of the stone in cm^3. Explain how you get your answer.

10

Numbers in the News

Go through the Scavenger Hunt list for Module 5 to make sure you have clipped at least one example for each item. Ask your home instructor to check the samples you found. Choose the samples you wish to use, and label each one with the name of the scavenger hunt item it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?

© 2002